US009409800B2

(12) **United States Patent**
Fraim et al.

(10) **Patent No.: US 9,409,800 B2**
(45) **Date of Patent: Aug. 9, 2016**

(54) **ELECTRIC ARC FOR AQUEOUS FLUID TREATMENT**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **14/707,682**

(22) Filed: **May 8, 2015**

(65) **Prior Publication Data**

US 2015/0307371 A1 Oct. 29, 2015

Related U.S. Application Data

(63) Continuation of application No. 13/252,198, filed on Oct. 4, 2011, now Pat. No. 9,028,689.

(51) **Int. Cl.**

C02F 1/46	(2006.01)
C02F 1/467	(2006.01)
C02F 1/30	(2006.01)
C02F 1/78	(2006.01)
C02F 101/36	(2006.01)
C02F 101/30	(2006.01)
C02F 101/32	(2006.01)

(52) **U.S. Cl.**

CPC ***C02F 1/4672*** (2013.01); ***C02F 1/30*** (2013.01); ***C02F 1/46*** (2013.01); ***C02F 1/4608*** (2013.01); *C02F 1/78* (2013.01); *C02F 2101/30* (2013.01); *C02F 2101/306* (2013.01); *C02F 2101/327* (2013.01); *C02F 2101/36* (2013.01); *C02F 2101/363* (2013.01); *C02F 2201/4619* (2013.01); *C02F 2305/023* (2013.01)

(58) **Field of Classification Search**

CPC C07C 1/00; C02F 1/46; C02F 1/78; C02F 101/10; C02F 101/30; C02F 2101/327; C02F 2101/306; C02F 2101/30

USPC 210/153, 243, 748.01, 748.17; 422/22, 422/186, 186.04; 204/156, 157.15, 164, 204/518, 554

See application file for complete search history.

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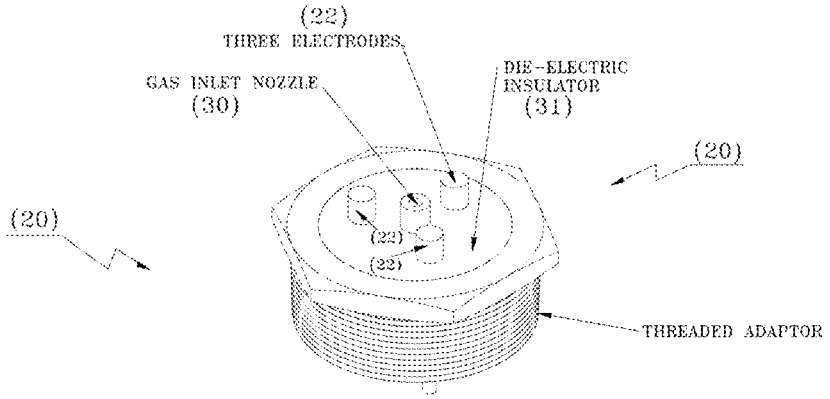
(57) **ABSTRACT**

An aqueous fluid treatment method and system is provided which preferably uses a 3 step electro-chemical oxidation process to remove organic contaminates from water. A high surface area electro-chemical reaction cell can be employed to remove organic particles and precipitate hardness salts from the aqueous solution. Several 3-phase spark arcs generated mixed oxidants and acoustic cavitations to remove dissolved organic compounds and oxidize organic metal compounds in the next step. Finally, a dielectric discharge in aqueous foam is used to eliminate recalcitrant organic compounds such as, but not limited to, polychlorinated aromatics, disinfectants, pesticides, and pharmaceuticals before release to environment or recycled.

1 Claim, 9 Drawing Sheets



THREE ELECTRODE SPARK PLUG